WHAT IS CLAIMED IS:

1. A sensing device for sensing an amount of force transferred between a first element and a second element, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being configured to be operatively connected to the first element and the second attachment structure being configured to be operatively connected to the second element;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling a force to be transferred from the first element and the first attachment structure to the second element and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to a magnitude of the force; and

a sensor including a first switch and a second switch, each of the first and second switches being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the first switch upon reaching a predetermined maximum linear displacement between the first and second attachment structures, the actuating member being positioned to actuate the second switch upon reaching a predetermined minimum linear displacement between the first and second attachment structures.

2. The sensing device according to claim 1, wherein at least one of the first and second elements is a cable.

3. The sensing device according to claim 2, wherein the cable is a brake cable operatively connected to brake mechanisms of a vehicle.

4. The sensing device according to claim 2, wherein the first attachment structure moves relative to the second attachment structure against biasing of the biasing structure upon tension being applied to the cable and the first attachment structure moves relative to

the second attachment structure with biasing of the biasing structure upon tension being released from the cable.

5. The sensing device according to claim 1, wherein at least one of the first and second elements is a rigid rod.

6. The sensing device according to claim 1, wherein the biasing structure is a spring.

7. The sensing device according to claim 1, wherein the biasing structure is a set of wave washers.

8. The sensing device according to claim 1, wherein the biasing structure is a set of Belleville washers.

9. A brake actuator for actuating brake mechanisms of a vehicle comprising:

a reversible motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in a brake-applying direction and a brake-releasing direction;

a brake cable operatively connected between the activation member and the brake mechanisms of the vehicle such that (a) actuation of the motor to move the activation member in the brake-applying direction applies a force to the brake cable to increase tension in the brake cable, and (b) actuation of the motor to move the activation member in the brake-releasing direction releases the force to reduce the tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor including a first switch and a second switch, each of the first and second switches being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the first switch upon reaching a predetermined maximum linear displacement between the first and second attachment structures, the actuating member being positioned to actuate the second switch upon reaching a predetermined minimum linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in the brake-applying direction upon the first switch being actuated by the actuating member and to cease rotation of the motor in the brake-releasing direction upon the second switch being actuated by the actuating member.

10. The brake actuator according to claim 9, wherein the first attachment structure moves relative to the second attachment structure against biasing of the biasing structure upon the activation member being moved to increase tension in the cable, and the first attachment structure moves relative to the second attachment structure with biasing of the biasing structure upon the activation member being moved to release tension from the cable.

11. The brake actuator according to claim 9, wherein the biasing structure is a spring.

12. The brake actuator according to claim 9, wherein the biasing structure is a set of wave washers.

13. The brake actuator according to claim 9, wherein the biasing structure is a set of Belleville washers.

14. A vehicle comprising:

a wheel assembly;

a brake mechanism mounted to the wheel assembly, the brake mechanism operable to apply a braking force to the wheel assembly;

a brake actuator for actuating the brake mechanism of the wheel assembly, the brake actuator comprising:

a reversible motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in a brake-applying direction and a brake-releasing direction;

a brake cable operatively connected between the activation member and the brake mechanism such that (a) actuation of the motor to move the activation member in the brake-applying direction applies a force to the brake cable to increase tension in the brake cable, and (b) actuation of the motor to move the activation member in the brake-releasing direction releases the force to reduce the tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor including a first switch and a second switch, each of the first and second switches being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the first switch upon reaching a predetermined maximum

linear displacement between the first and second attachment structures, the actuating member being positioned to actuate the second switch upon reaching a predetermined minimum linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in the brake-applying direction upon the first switch being actuated by the actuating member and to cease rotation of the motor in the brake-releasing direction upon the second switch being actuated by the actuating member.

15. The vehicle according to claim 14, wherein the first attachment structure moves relative to the second attachment structure against biasing of the biasing structure upon the activation member being moved to increase tension in the cable, and the first attachment structure moves relative to the second attachment structure with biasing of the biasing structure upon the activation member being moved to release tension from the cable.

16. The vehicle according to claim 14, wherein the biasing structure is a spring.

17. The vehicle according to claim 14, wherein the biasing structure is a set of wave washers.

18. The vehicle according to claim 14, wherein the biasing structure is a set of Belleville washers.

19. The vehicle according to claim 14, wherein the wheel assembly is a rear wheel assembly.

20. A method for sensing a magnitude of force being applied to a cable by a motor using a sensing device comprising (a) a first attachment structure operatively connected to the motor, (b) a second attachment structure operatively connected to the cable and mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures, (c) an actuating member provided on one of the first and second attachment structures, (d) a biasing structure positioned between the first and second attachment structures and enabling the force to be transferred from the motor and the first attachment structure to the cable and the second attachment structure through the biasing

structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force, (e) a sensor including a first switch and a second switch, each of the first and second switches being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the first switch upon reaching a predetermined maximum linear displacement between the first and second attachment structures, the actuating member being positioned to actuate the second switch upon reaching a predetermined minimum linear displacement between the first and second attachment structures, and (f) a control assembly connected between the motor and the sensor, the control assembly being operable to cease rotation of the motor in the brake-applying direction upon the first switch being actuated by the actuating member and to cease rotation of the motor in the brake-releasing direction upon the second switch being actuated by the actuating member, the method comprising:

operating the motor to vary a force applied to the cable through the sensing device to vary tension in the cable;

actuating one of the first and second switches with the actuating member; and

the control assembly detecting the actuation of the switch and responsively ceasing operation of the motor.

21. A sensing device for sensing an amount of force transferred between a first element and a second element, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being configured to be operatively connected to the first element and the second attachment structure being configured to be operatively connected to the second element;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling a force to be transferred from the first element and the first attachment structure to the second element and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to a magnitude of the force;

a sensor including a potentiometer that outputs a voltage signal corresponding to a linear displacement between the first and second attachment structures, the potentiometer outputting the voltage signal; and

a control assembly operable to receive the outputted voltage signal from the sensor and identify (1) a maximum voltage signal when a maximum linear displacement between the first and second attachment structures is reached, and (2) a minimum voltage signal when a minimum linear displacement between the first and second attachment structures is reached.

22. The sensing device according to claim 21, wherein the control assembly adjusts the maximum voltage signal and the minimum voltage signal in accordance with signals received from one or more vehicle sensors.

23. The sensing device according to claim 22, wherein the one or more vehicle sensors includes an incline sensor that outputs an incline signal to the control assembly, the control assembly adjusting the maximum voltage signal and the minimum voltage signal based on the incline signal received from the incline sensor.

24. The sensing device according to claim 21, wherein at least one of the first and second elements is a cable.

25. The sensing device according to claim 24, wherein the cable is a brake cable operatively connected to brake mechanisms of a vehicle.

26. The sensing device according to claim 24, wherein the first attachment structure moves relative to the second attachment structure against biasing of the biasing structure upon tension being applied to the cable and the first attachment structure moves relative to the second attachment structure with biasing of the biasing structure upon tension being released from the cable.

27. The sensing device according to claim 24, wherein at least one of the first and second elements is a rigid rod.

28. The sensing device according to claim 24, wherein the biasing structure is a spring.

29. The sensing device according to claim 24, wherein the biasing structure is a set of wave washers.

30. The sensing device according to claim 24, wherein the biasing structure is a set of Belleville washers.

31. A sensing device for sensing an amount of force transferred between a first element and a second element, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being configured to be operatively connected to the first element and the second attachment structure being configured to be operatively connected to the second element;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling a force to be transferred from the first element and the first attachment structure to the second element and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to a magnitude of the force; and

a sensor including a switch, the switch being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the switch upon reaching a predetermined linear displacement between the first and second attachment structures.

32. A brake actuator for actuating brake mechanisms of a vehicle comprising:

a motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in at least a brake-applying direction;

a brake cable operatively connected between the activation member and the brake mechanisms of the vehicle such that actuation of the motor moves the activation member in at least the brake-applying direction to apply a force to the brake cable to increase tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor including a switch, the switch being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the switch upon reaching a predetermined linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in at least the brake-applying direction upon the switch being actuated.

33. A vehicle comprising:

a wheel assembly;

a brake mechanism mounted to the wheel assembly, the brake mechanism operable to apply a braking force to the wheel assembly;

a brake actuator for actuating the brake mechanism of the wheel assembly, the brake actuator comprising:

a motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in at least a brake-applying direction;

a brake cable operatively connected between the activation member and the brake mechanism such that actuation of the motor moves the activation member in at least the brake-applying direction to apply a force to the brake cable to increase tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor including a switch, the switch being adapted to be actuated by the actuating member, the actuating member being positioned to actuate the switch upon reaching a predetermined linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in at least the brake-applying direction upon the switch being actuated.

34. A sensing device for sensing an amount of force transferred between a first element and a second element, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being configured to be operatively

connected to the first element and the second attachment structure being configured to be operatively connected to the second element;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling a force to be transferred from the first element and the first attachment structure to the second element and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to a magnitude of the force; and

a sensor operable to sense a position of the actuating member to determine the relative linear displacement between the first and second attachment structures.

35. A brake actuator for actuating brake mechanisms of a vehicle comprising:

a motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in at least a brake-applying direction;

a brake cable operatively connected between the activation member and the brake mechanisms of the vehicle such that actuation of the motor moves the activation member in at least the brake-applying direction to apply a force to the brake cable to increase tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow

relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor operable to sense a position of the actuating member to determine the relative linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in at least the brake applying direction upon the sensor determining the actuating member has reached a predetermined position.

36. A vehicle comprising:

a wheel assembly;

a brake mechanism mounted to the wheel assembly, the brake mechanism operable to apply a braking force to the wheel assembly;

a brake actuator for actuating the brake mechanism of the wheel assembly, the brake actuator comprising:

a motor;

an activation member operatively connected to the motor, the motor being selectively actuatable to move the activation member in at least a brake-applying direction;

a brake cable operatively connected between the activation member and the brake mechanism such that actuation of the motor moves the activation member in at least the brake-applying direction to apply a force to the brake cable to increase tension in the brake cable;

a sensing device for sensing a magnitude of the force transferred between the activation member and the brake cable, the sensing device comprising:

a first attachment structure;

a second attachment structure mounted to the first attachment structure to enable relative linear movement between the first and second attachment structures in opposing first and second directions, the first attachment structure being operatively connected to the activation member and the second attachment structure being operatively connected to the brake cable;

an actuating member provided on one of the first and second attachment structures;

a biasing structure positioned between the first and second attachment structures, the biasing structure enabling the force to be transferred from the activation member and the first attachment structure to the brake cable and the second attachment structure through the biasing structure with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures in an amount related to the magnitude of the force; and

a sensor operable to sense a position of the actuating member to determine the relative linear displacement between the first and second attachment structures; and

a control assembly connected between the motor and the sensor of the sensing device, the control assembly being operable to cease rotation of the motor in at least the brake applying direction upon the sensor determining the actuating member has reached a predetermined position.